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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/937,481	12/20/2001	Makoto Kondo	110708	9660

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Alexandria, VA 22320

EXAMINER

ESPLIN, DAVID B

ART UNIT PAPER NUMBER

2851

DATE MAILED: 02/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/937,481	KONDO, MAKOTO	
	Examiner	Art Unit	
	D. Ben Esplin	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☒ Claim(s) 1,2,4-13 and 21-26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 20 December 2001 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 6) ☐ Other: _____

DETAILED ACTION

Drawings

The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 20 December 2001, have been accepted. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the dustproof film adjacent to the beam attenuating filter at a predetermined interval (claims 7 and 8), a mark on the beam attenuating filter (claims 10-20 and 27) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

Claims 1, 2, 4-13, and 21-26 are objected to because of the following informalities:

These claims all include the limitation of basing exposure on “a characteristic obtained by multiplying a first characteristic which gradually decreases outward along the first direction by a second characteristic which gradually decreases outward along a second direction”. According to the 10th Edition of Merriam-Webster’s Collegiate Dictionary, a characteristic is “a distinguishing trait, quality, or property”. Applying this definition to the above claim language renders this passage incoherent. For examination purposes this phrase has been interpreted to mean that the transmittance of exposure light decreases outward in two directions in a region where corner portions of the four regions overlaps.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 10-20 and 27 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. At no point in the specification is an enabling description of the structure and function of a filter alignment mark system presented. In fact, there are only paragraphs that include any reference whatsoever of this feature (the paragraph that begins on page 20 and ends

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on page 21, and the second paragraph of page 53), and then it is only mentioned in passing. Should this rejection be overcome, this element of a filter alignment mark system would be allowable subject matter since an alignment mark used to finely position a filter is not taught in the prior art.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 9, and 21-26 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,486,896 to Hazama et al.

FIG. 1 of Hazama shows an exposure apparatus for transferring a pattern of a mask onto a substrate including, an illumination optical system (lamp 1), a field stop (light shield plates 600A and 600B), a substrate stage (stage 12) for positioning the substrate (substrate 11), and a beam attenuating filter (ND filters 601A and 601B) positioned by a positioning member (shown in FIGS. 2 and 3). FIG. 5 shows that the beam attenuating filters decrease transmittance decreases outward from the aperture S as a function of a distance multiplied by a transmittance constant. Further, FIG. 4 shows that during the exposure in the corners, where the exposure may overlap with another as shown in FIG. 7 (exposure areas Ra-Rd), the filters overlap. This overlapping creates a filter that decreases the transmittance of the exposure light passing through the filter in two directions.

Referring to claims 1-4, and 22-26, the structure and function of the exposure apparatus of Hazama would inherently lead to the method steps recited in these claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hazama as applied to claims 1-6, 9, and 21-26 above, and further in view of U.S. Patent No. 5,085,899 to Nakagawa et al.

Although Hazama is silent concerning the use of a dustproof film disposed near the surface of the beam attenuating filter, Nakagawa teaches that the use of a dust-proof film for protecting optical elements in an exposure apparatus was well known in the art (see abstract). Thus it would have been obvious to dispose a dustproof film near the beam attenuating filter of Hazama in order to prevent dust from accumulating on the filter to increase the precision of the exposure apparatus of Hazama over long periods of operation, as is taught by Nakagawa (col. 1 lines 14-29).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


U.S. Patent No. 6,213,607 to Watanabe et al. discloses an exposure apparatus including a beam attenuating filter that decreases the transmittance of exposure light in two directions.


U.S. Patent No. 6,356,341 to Murakami et al. discloses an exposure apparatus including a beam attenuating filter that decreases the transmittance of exposure light in two directions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. Ben Esplin whose telephone number is (703) 305-4022. The examiner can normally be reached on Mon.-Fri. (8am-4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russell E. Adams can be reached on (703) 308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


DBE
February 7, 2003


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